# CBX100 LT
# Installation Manual

The CBX100 LT is a connection box which can be used as an accessory to facilitate system connections for installation and device replacement of several Datalogic family reading devices specifically designed to be used in low temperature applications.

System cabling is made through spring clamp terminal blocks inside the CBX100 LT while the reading device is connected to the CBX100 LT through a 25-pin connector on the housing.

A 9-pin connector placed inside the CBX100 LT facilitates connection between an external PC and the auxiliary serial interface of the reading device for configuration or data monitoring.

## GENERAL VIEW

**CBX100 LT**

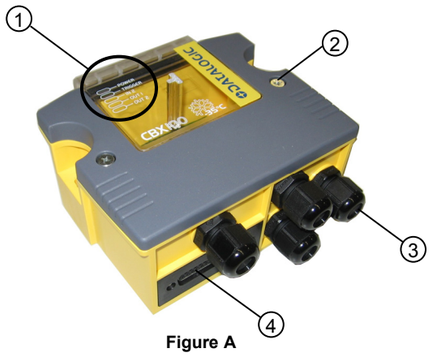



**Figure A**

① Indicator LEDs
② Cover Screws (2)
③ Compression Connectors (4)
④ 25-pin Device Connector

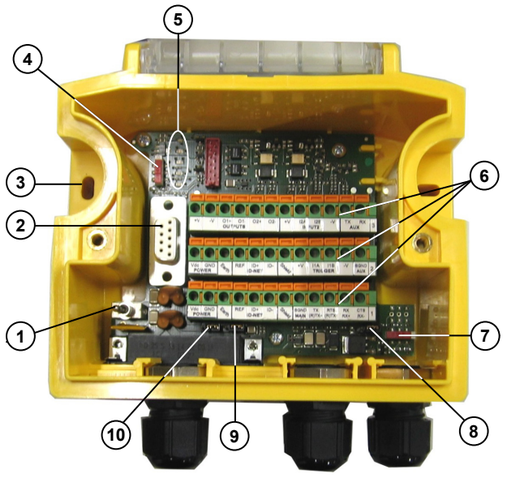



**Figure B**

① Power switch (ON/OFF)
② Auxiliary Port Connector
③ Mounting Holes (2)
④ ID-NET™Termination Resistance Switch
⑤ Indicator LEDs
⑥ Spring Clamp Terminal Blocks
⑦ RS485 Termination Resistance Switch
⑧ Power Source Selector
⑨ Shield to Protection Earth Selector
⑩ Chassis Grounding Selector

## SAFETY PRECAUTIONS

**ATTENTION: READ THIS INFORMATION BEFORE INSTALLING THE PRODUCT**

**POWER SUPPLY**

**This product is intended to be installed by Qualified Personnel only.**
This device is intended to be supplied by a UL Listed NEC Class 2 power source.

**CAUTION**

*Total power consumption is given by adding the CBX100 LT power consumption to that of all the devices powered through the CBX100 LT (reading device, P.S., I/O). Refer to the manual of the connected devices for details about minimum/maximum supply voltage and power consumption.*

**Each CBX100 LT supports only 1 single reading device + system accessories.**

## OPENING THE CBX100 LT

To install the CBX100 LT or during normal maintenance, it is necessary to open it by unscrewing the two cover screws:

**CAUTION**

*The CBX100 LT must be disconnected from the power supply during this operation.*

*Installation must be made at a temperature not lower than -20 °C.*

## MECHANICAL INSTALLATION

CBX100 LT can be mounted to various wooden or plastic surfaces using the two self-threading screws (3.9 x 45 mm) and washers provided in the package.

Mounting to other surfaces such as concrete walls or metallic panels requires user-supplied parts (screws, screw anchors, nuts, etc). A mounting template is included in the package to facilitate hole drilling alignment.

CBX100 LT can also be mounted to a DIN rail or a Bosch Frame using the following mounting accessories: BA100 (93ACC1821), BA200 (93ACC1822).

The diagram below gives the overall dimensions of the CBX100 LT and shows the two mounting through-holes.

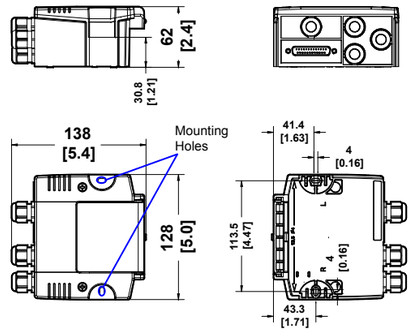



**Figure 1 - Overall Dimensions**

## ELECTRICAL CONNECTIONS AND SETUP

The following figure shows a typical layout.

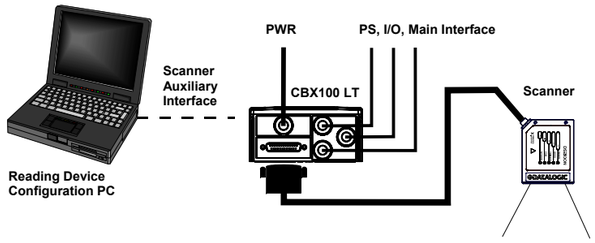



**Figure 2 – System Layout**

The dotted line in the figure refers to an optional (temporary) hardware configuration in which a portable PC can be quickly connected to the CBX100 LT (and consequently to the reading device auxiliary interface) through the internal 9-pin connector. This allows monitoring of the data transmitted by the reading device or configuration through the utility program (see the reading device Installation Manual for more details). The reading device auxiliary interface signals are also available on the internal spring clamp connectors.

After making system cabling and switch settings, connect the reading device to the 25-pin connector on the CBX100 LT housing.

Switch ON the CBX100 LT power switch (see Figure 3). The Power LED turns on (blue) when the power connection has the correct polarity. The Power LED turns on (red) in case of wrong polarity.

After system functioning has been verified, close the CBX100 LT using the 2 cover screws.

## POWER SUPPLY

Power is supplied to the CBX100 LT through the Vdc and GND pins provided on the spring clamp connector.

The power switch (see Figure 3) switches the power supply ON or OFF for both the CBX100 LT and the connected reading device.

**CAUTION**

*The power switch does not control power to the Vdc/GND, +V/-V spring clamps, therefore any devices connected to these signals (i.e. external trigger, encoder, etc.), are live and are not protected from polarity inversion. Disconnect the power supply when working inside the CBX100 LT.*

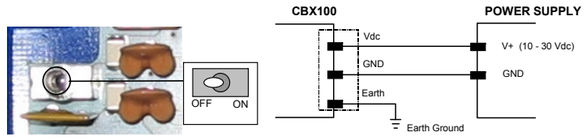



**Figure 3 - Power Switch ON/OFF Positions and Connections**

**NOTE**

*Vdc is electrically connected to +V, just as GND is electrically connected to -V. This is useful for supplying external trigger, inputs and outputs from the CBX100 LT power source, however +V and -V signals should not be used as power supply inputs to the CBX100 LT.*

**The power supply must be between 10 and 30 Vdc only.**

**NOTE**

*To avoid electromagnetic interference:*

- *Connect CBX100 LT Protection Earth (Earth) to a good earth ground.*
- *Connect the reading device chassis to earth ground through the jumper, (default setting, see Figure 7).*
- *Connect the Network Cable Shield (Shield) to Filtered Earth through the jumper (default setting, see Figure 6).*

## SYSTEM WIRING

The connection and wiring procedure for CBX100 LT is described as follows:

1) Open the CBX100 LT by unscrewing the 2 cover screws.
2) Verify that the CBX100 LT power switch is off (see Figure 3).
3) Unscrew the compression connectors and pass all the system cables through them into the CBX100 LT housing.
4) To connect the power and input/output signals:
   - Prepare the individual wires of the system cables by stripping the insulation back approximately 1 cm.
   - Using a device such as a screwdriver, push down on the lever directly next to the clamp (see Figure 4).
   - Insert the wire into the clamp and release the lever.

   The wire will now be held in the spring clamp.
5) Tighten the compression connector nuts so that the internal glands seal around the cables.

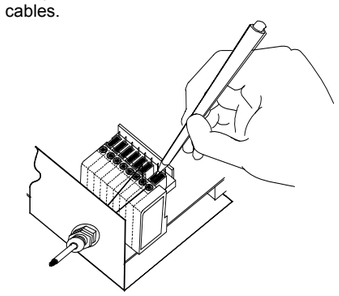


**Figure 4 - System Cable Connections**

Flexible stranded wire should be used and must meet the following specifications.

All positions: 24 - 16 AWG 0.2 - 1.5 mm²

The CBX100 LT spring clamp connector pinouts are indicated in the Pinout table.

**Refer to the reading device Installation Manual for signal details.**

| Pinouts | | | | |
|---|---|---|---|---|
| **Group** | **Name** | **Function** | | |
| Input Power | Vdc | Power Supply Input Voltage + | | |
| | GND | Power Supply Input Voltage - | | |
| | Earth | Protection Earth Ground | | |
| External Trigger Input | +V | Power Source – External Trigger | | |
| | I1A | External Trigger A (polarity insensitive) | | |
| | I1B | External Trigger B (polarity insensitive) | | |
| | -V | Power Reference – External Trigger | | |
| Generic Input | +V | Power Source – Inputs | | |
| | I2A | Input 2 A (polarity insensitive) | | |
| | I2B | Input 2 B (polarity insensitive) | | |
| | -V | Power Reference – Inputs | | |
| Outputs | +V | Power Source – Outputs | | |
| | -V | Power Reference – Outputs | | |
| | O1+ | Output 1 + | | |
| | O1- | Output 1 - | | |
| | O2+ | Output 2 + | | |
| | O2- | Output 2 - | | |
| Auxiliary Interface | TX | Auxiliary Interface TX | | |
| | RX | Auxiliary Interface RX | | |
| | SGND | Auxiliary Interface Reference | | |
| ID-NET™ | REF | Network Reference | | |
| | ID+ | ID-NET™ Network + | | |
| | ID- | ID-NET™ Network - | | |
| Network | Shield | Network Cable Shield | | |
| | | **RS232** | **RS485FD** | **RS485HD** |
| Main Interface | | TX | TX+ | RTX+ |
| | | RTS | TX- | RTX- |
| | | RX | *RX+ | |
| | | CTS | *RX- | |
| | | SGND | SGND | SGND |

The input power signals **Vdc**, **GND** and **Earth** as well as the network signals **REF**, **ID+**, **ID-** and **Shield** are repeated to facilitate system cabling. In this way the power and network busses can enter and exit the CBX100 LT from different spring clamps but be physically connected together.

## POWER SOURCE JUMPER SETTINGS

For most applications input power is provided through the dedicated spring clamp connectors inside the CBX100 LT.

However CBX100 LT may accept power from the connected reading device through the 25-pin connector. This is useful, for example, to pass power to connected accessories such as Encoder and Presence Sensor from DX8200A VAC models or 6K/8K scanners powered directly through the network. See the relative reading device Reference Manual for details.

To power CBX100 LT from the reading device, the power source jumper must be placed in the "power from device" position as indicated in Figure 5.

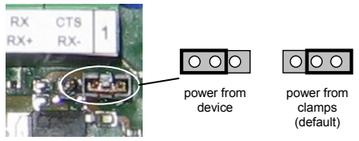



**Figure 5–Power Source Jumper Settings**

## SHIELD TO PROTECTION EARTH JUMPER SETTINGS

The network cable shield (Shield) can be connected to Earth Ground (Earth) either directly or through a filter circuit. If the jumper is left open, the network cable shield (Shield) is floating.

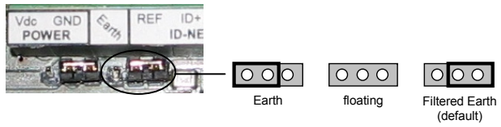



**Figure 6– Shield to Protection Earth Jumper Settings**

## CHASSIS GROUNDING JUMPER SETTINGS

The reading device chassis grounding method can be selected by positioning a jumper (see Figure 7). In this way the reading device chassis can be connected to earth ground (only if pin Earth is connected to a good earth ground). For all reading devices except 6K/8K, the chassis can alternatively be connected to the power supply ground signal (GND) or it can be left floating but, in this case, the jumper must be removed. For 6K or 8K scanners the chassis is internally connected to GND.

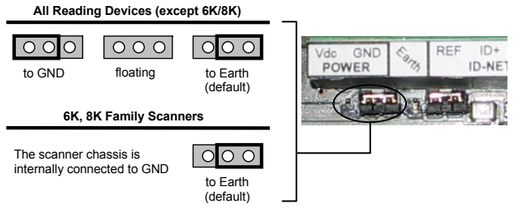



**Figure 7 – Chassis Grounding**

## 9-PIN READING DEVICE AUXILIARY SERIAL INTERFACE

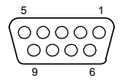
The reading device auxiliary serial interface available on the internal CBX100 LT 9-pin connector can be used either for configuration or for data monitoring.

Connections can be made to a PC or Laptop using a straight through cable or a USB-RS232 converter.

The details of the connector pins are indicated in the following table:

**CBX100 LT 9-pin D-Sub Female Connector Pinout**

| Pin | Name | Function |
|---|---|---|
| 2 | TX | Auxiliary RS232 |
| 3 | RX | Auxiliary RS232 |
| 5 | SGND | Auxiliary Reference Ground |
| 1, 4, 6, 7, 8, 9 | | N.C. |




## NETWORK BUS TERMINATION

**ID-NET™**

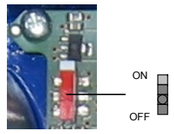



**Figure 8 – ID-NET™ Termination Resistance Switch**

The ID-NET™ termination resistance switch enables or disables the insertion of the bus termination resistor for ID-NET™ network applications.

**CAUTION**

*In ID-NET™ network applications the termination resistor must be enabled ONLY on the first and last devices of the chain. On all the other devices this resistor MUST NOT be enabled (OFF).*

**RS485 HD**

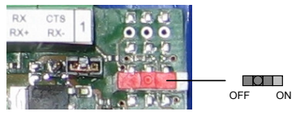



**Figure 9 – RS485 HD Termination Resistance Switch**

The RS485 HD termination resistance switch enables or disables the insertion of the bus termination resistor for RS485 Half Duplex Multidrop applications.

**CAUTION**

*In Multiplexer applications the termination resistor must be enabled ONLY on the last device of the chain, the farthest away from the Multiplexer (assuming the Multiplexer is the first device of the chain). On all the other devices this resistor MUST NOT be enabled (OFF).*

## INDICATOR LEDS

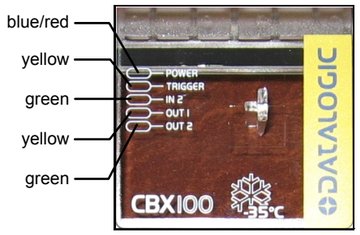



**Figure 10 – Indicator LEDs**

There are five Indicator LEDs which signal power and I/O activity and are visible from the CBX100 LT outside cover.

The Power LED is blue when power is correctly applied to the CBX100 LT and the power switch is turned on.

This LED is red if power polarity is incorrect. In this case the connected reading device and optional Backup Module are protected.

**CAUTION**

*If external I/O devices are powered through CBX100 LT (connected to +V/-V), they are not protected from polarity inversion.*

The remaining four LEDs signal activity on the relative I/O lines. Their meaning depends on the software configuration of the connected reading device.

## TECHNICAL FEATURES

| | |
|---|---|
| **ELECTRICAL FEATURES** | |
| Supply Voltage | 10 to 30 Vdc* |
| Consumption | 0.5 – 0.3 A |
| Limited Current Consumption CBX + reading device consumption (see related manual) | 2.5 A Max |
| **USER INTERFACE** | |
| LED Indicators | Power On/Polarity Error (blue/red)<br>Trigger (yellow)<br>IN2 (green)<br>OUT1 (yellow)<br>OUT2 (green) |
| **PHYSICAL FEATURES** | |
| Mechanical Dimensions | 138 x 128 x 62 mm<br>(5.4 x 5 x 2.4 in.) |
| Weight | about 380 g. (13.40 oz.) |
| **ENVIRONMENTAL FEATURES** | |
| Operating Temperature | -35° to 50 °C (-31° to 122 °F)** |
| Storage Temperature | -35° to 70 °C (-31° to 158 °F) |
| Humidity max. | 90% non condensing |
| Vibration Resistance<br>EN 60068-2-6<br>2 hours on each axis | 14 mm @ 2 to 10 Hz<br>1.5 mm @ 13 to 55 Hz<br>2 g @ 70 to 200 Hz |
| Shock Resistance<br>EN 60068-2-27 | 30 g; 11 ms;<br>3 shocks on each axis |
| Protection Class<br>EN 60529 | IP65<br>(when compression connectors and reading device are correctly connected) |

The features given are typical at a 25 °C ambient temperature (if not otherwise indicated).

* for further details about minimum/maximum supply voltage refer to the manual of the connected reading device, since the minimum supply voltage required may be >10.

** installation must be made at a temperature not lower than -20 °C.

## SERVICES AND SUPPORT

Datalogic provides several services as well as technical support through its website. Log on to **www.automation.datalogic.com** and click on the links indicated for further information including:

- **PRODUCTS**
  Search through the links to arrive at your product page where you can download specific **Manuals** and **Software & Utilities**:
- **SERVICES & SUPPORT**
  - **Datalogic Services** - Warranty Extensions and Maintenance Agreements
  - **Authorised Repair Centres**
- **CONTACT US**
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## CE COMPLIANCE

**Warning:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

DATALOGIC™ DECLARATION OF CONFORMITY CE 08

**Datalogic Automation S.r.l.**
**Via S. Vitalino 13**
**40012 - Lippo di Calderara**
**Bologna - Italy**

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declares that the
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**CBX100 LT, connection box compact low temperature** e tutti i suoi modelli
and all its models
et tous ses modèles
und seine Modelle
y todos sus modelos

sono conformi alle Direttive del Consiglio Europeo sottoelencate:
are in conformity with the requirements of the European Council Directives listed below:
sont conformes aux spécifications des Directives de l'Union Européenne ci-dessous:
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Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.
On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.
Basée sur la législation des Etats membres relative à la compatibilité électromagnétique et à la sécurité des produits.
Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.
Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

Questa dichiarazione è basata sulla conformità dei prodotti alle norme seguenti:
This declaration is based upon compliance of the products to the following standards:
Cette déclaration repose sur la conformité des produits aux normes suivantes:
Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:
Esta declaración se basa en el cumplimiento de los productos con las siguientes normas:

**EN 55022 (Class A ITE),September 1998**: INFORMATION TECHNOLOGY EQUIPMENT
RADIO DISTURBANCE CHARACTERISTICS
LIMITS AND METHODS OF MEASUREMENTS

**EN 61000-6-2, September 2005**: ELECTROMAGNETIC COMPATIBILITY (EMC)
PART 6-2: GENERIC STANDARDS – IMMUNITY FOR INDUSTRIAL ENVIRONMENTS

Lippo di Calderara, January 29th, 2008

Lorenzo Girotti
Product & Process Quality Manager

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